

STATEMENT OF BASIS

CER Generation, LLC
Hillabee Power Plant
Alexander City, Alabama
Tallapoosa County
310-0022

This proposed Title V Major Source Operating Permit is issued under the provisions of ADEM Admin. Code r. 335-3-16. The above-referenced applicant has applied to renew the existing Title V Permit, which was originally issued on May 9, 2011. The above-referenced applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans and other documents, which were submitted on November 4, 2015, and are attached hereto or on file with the Air Division of the Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit.

CER Generation, LLC. was issued its existing Major Source Operating Permit (MSOP) on May 9, 2011, with an expiration date of May 8, 2016. Per ADEM Rule 335-3-16-.12(2), an application for permit renewal shall be submitted at least six (6) months, but not more than eighteen (18) months, before the date of expiration of the permit. Based on this rule, the application for renewal was due to the Department no later than November 8, 2015. No additional information was deemed necessary for processing of this MSOP.

The Hillabee Power Plant is operated by CER Generation and is located in Alexander City, Tallapoosa County, Alabama. This facility generates approximately 707 MW (nominal) of electric power for distribution to the electrical grid. The significant sources of air pollutants at this facility are:

- Two (2) 229 MW (nominal) Natural Gas Fired Combined-Cycle Combustion Turbines each consisting of one combustion turbine (CT) and one heat recovery steam generator (HRSG) equipped with a 169 MMBtu/hr (HHV) natural gas fired duct burner and Selective Catalytic Reduction (SCR).
- 11.64 MMBtu/hr Indirect-fired fuel heater (natural gas fired).
- 805 HP Existing Emergency Firewater Pump

Additionally, the applicable requirements of Cross-State Air Pollution Rule (CSAPR) will be included in this renewal.

Two (2) Combined-Cycle Combustion Turbine Units

The combined-cycle combustion turbine units fire only pipeline quality natural gas. The combustion turbines are Siemens Westinghouse Model 501G designs with a nominal electric generation capacity of approximately 229 MW each (nominal). The NO_x emissions from the combined cycle combustion turbines are controlled by the use of SCRs installed in each HRSG.

The combined-cycle combustion turbine units were subject to a Prevention of Significant Deterioration (PSD) Review in which BACT was established for NO_x, SO₂, CO, VOC, PM and Sulfuric Acid Mist. The combined-cycle combustion turbines are also subject to the Federal New Source Performance Standards (NSPS) contained in 40 CFR Part 60, Subpart KKKK. Per Subpart KKKK, the CTs/duct burners are no longer obligated to meet the requirements of NSPS, Subparts GG, Da, Db, and Dc.

The estimated emissions and the associated standards for the combined-cycle combustion turbines are listed below.

Emission Standards

Opacity:

- Except during startup, shutdown, and load change, visible emissions from these units shall not exceed 10% opacity.

(ADEM Admin. Code r. 335-3-14-.04) BACT

Particulate Matter (PM):

- The PM emissions from the each combustion turbine/duct burner stack shall not exceed 0.011 lb/MMBtu and 27.5 lbs/hr.

(ADEM Admin. Code r. 335-3-14-.04) BACT

The PM emission standards apply at all time except during startup, shutdown, and load change.

Sulfur Dioxide (SO₂):

- The SO₂ emissions from each combustion turbine/duct burner stack shall not exceed 0.90 lb/MWh gross output or 0.060 lb/MMBtu heat input (3-hr rolling average).

(40 CFR Part 60 Subpart KKKK)

The SO₂ emission standards apply at all time except during startup, shutdown, and malfunction.

- The SO₂ emissions from the each combustion turbine/duct burner stack shall not exceed 0.0056 lb/MMBtu and 15.2 lbs/hr (3-hr rolling average).

(ADEM Admin. Code r. 335-3-14-.04) BACT

The SO₂ emission standards apply at all time except during startup, shutdown, and load change.

Nitrogen Oxides (NO_x):

- The combined NO_x emissions from each combustion turbine/duct burner stack shall not exceed 0.009 lb/MMBtu and 24.6 lb/hr (3-hr rolling average).

(ADEM Admin. Code r. 335-3-14-.04) BACT

- The NO_x emissions from each combustion turbine/duct burner stack shall not exceed 15 ppm (at 15% O₂) or 0.43 lb/MWh of useful output (30-day rolling average).

(40 CFR Part 60 Subpart KKKK)

- The NO_x emissions from each combustion turbine/duct burner stack shall not exceed 96 ppm at (15% O₂) or 4.7 lb/MWh of useful output when operating at a level less than 75% load (30-day rolling average).

(40 CFR Part 60 Subpart KKKK)

The NO_x emission standards apply at all time except during startup, shutdown, and malfunction.

Carbon Monoxide (CO):

- The combined CO emissions from each combustion turbine/duct burner stack shall not exceed 0.073 lb/MMBtu and 194 lb/hr.

(ADEM Admin. Code r. 335-3-14-.04) BACT

- The CO emissions while firing the combustion turbine only shall not exceed 0.022 lb/MMBtu and 59.6 lb/hr.

(ADEM Admin. Code r. 335-3-14-.04) BACT

The CO emission standards apply at all time except during startup, shutdown, and load change.

Volatile Organic Compounds (VOC):

- The combined VOC emissions from each combustion turbine/duct burner stack shall not exceed 0.0068 lb/MMBtu and 18.1 lb/hr.

(ADEM Admin. Code r. 335-3-14-.04) BACT

The VOC emission standards apply at all time except during startup, shutdown, and load change.

Sulfuric Acid Mist (H₂SO₄):

- The combined H_2SO_4 emissions from each combustion turbine/duct burner stack shall not exceed 0.00086 lb/MMBtu and 2.3 lb/hr.

(ADEM Admin. Code r. 335-3-14-.04) BACT

The H_2SO_4 emission standards apply at all time except during startup, shutdown, and load change.

Operational Parameters:

- The combined hours of operation for power augmentation with duct firing, power augmentation alone, and duct firing alone shall not exceed 2000 hours in any consecutive 12-month period.

(ADEM Admin. Code r. 335-3-14-.04) BACT

- Originally Hillabee Power Plant had to operate at a load above 75% except for periods of startup or shutdown (See PSD Permit issued September 28, 2008). Persistent with the PSD and Title V permit, Hillabee Power Plant may operate at a load below 75% if compliance standards have been verified by compliance test and ambient air modeling confirms that all ambient air standards would be met at the new minimum load. On December 15, 2015 Hillabee Power Plant submitted stack test data to verify a new minimum load of 45%. Hillabee Power Plant also submitted, on May 20, 2016, ambient air modeling confirming the minimum load of 45%. The meteorological section of the air division at the Department confirmed with a memorandum dated January 5, 2017 stating that Hillabee Power Plant in Tallapoosa County, Alabama, are not expected to cause or contribute to any violation of the NAAQS or PSD Increment.

Expected Emissions

Particulate Matter (PM) and Opacity:

- During a compliance test on November 3, 2015, the PM emission rates from these units were less than the permitted allowable emission limit of 0.011 lb/MMBtu and 27.5 lb/hr. The following is the highest emission rates indicated by that compliance test:

Unit	PM lb/MMBtu	PM (lb/hr)
1	0.004 lb/MMBtu	6.3
2	0.0022lb/MMBtu	3.76

Sulfur Dioxide (SO₂):

- Natural gas is the exclusive fuel for these units, resulting in an emission rate of approximately 0.0006 lb/MMBtu.

Nitrogen Oxides (NO_x):

- During a compliance test on November 3, 2015, the NO_x emission rates from these units were less than the permitted allowable emission limit of 0.009 lb/MMBtu and 24.6 lb/hr. The following is the highest emission rates indicated by that compliance test:

Unit	NO_x lb/MMBtu	NO_x (lb/hr)
1	0.0076 lb/MMBtu	11.87
2	0.0069 lb/MMBtu	11.64

Carbon Monoxide (CO):

- During a compliance test on November 3, 2015, the CO emission rates from these units were less than the permitted allowable emissions limits of 0.022 lb/MMBtu and 59.6 lb/hr when firing the turbine only, and 0.073 lb/MMBtu and 194 lb/hr during times when power augmentation is in operation. The following are the highest emission rates indicated by the initial performance testing:

Unit	CO (lb/MMBtu)	CO (lb/hr)
1	0.016	24.66
2	0.015	25.27

Volatile Organic Compounds (VOC):

- During a compliance test on November 3, 2015, the VOC emission rates from these units were less than the permitted allowable emissions limits of 0.0068 lb/MMBtu and 18.1 lb/hr. The following is the highest emission rates indicated by the initial performance testing:

Unit	VOC (lb/MMBtu)	VOC (lb/hr)
1	0.0019	5.26
2	0.002	3.18

Green House Gases (GHG):

- The facility reported a total of 2,088,878 Tons. This is an estimate of the actual emissions.

Periodic monitoring and Compliance Assurance Monitoring (CAM)

Particulate Matter (PM) and Opacity:

- Based on the expected levels of emissions as compared to the regulatory allowable emission limits, periodic monitoring of opacity and particulate matter emissions is not considered necessary. Additionally the only control device for the CT is an SCR that is only used to control NO_x emissions; therefore, CAM is not applicable to PM and Opacity.

Sulfur Dioxide (SO₂):

- As stated within the NSPS regulations for gas turbines, periodic monitoring for SO₂ is not required based on the requirements for the units to only fire natural gas. Additionally the only control device for the CT is an SCR that is only used to control NO_x emissions; therefore, CAM is not applicable to SO₂ or Sulfuric Acid Mist.

Nitrogen Oxides (NO_x):

- The combined-cycle combustion turbine units are required by the current PSD permit to operate continuously on each exhaust stack a NO_x continuous emission monitoring system (CEMS). The CEMS is used to demonstrate compliance with the best available control technology (BACT) emission limits, the Acid Rain Program, and CSAPR.

- These units are required by 40 CFR Part 75 to maintain and operate NO_x Continuous Emissions Monitoring Systems (CEMS). Based on 40 CFR §64.2, the only pollutant potentially subject to CAM would be NO_x since it is the only pollutant which is controlled by an active control device and the potential uncontrolled emission rate is greater than 100 tons per year. 40 CFR §64.2(b)(vi) provides exemptions for the CAM regulations including using CEMS as a continuous compliance determination method (CCDM). Hillabee has requested that the NO_x CEMS also be used as CCDM. 40 CFR §64.2(b)(vi) states that the requirements of CAM shall not apply to any of the emission limitations or standards for which a part 70 or 71 permit specifies a CCDM. The CEMS would therefore be a compliance determiner for each of the applicable NO_x limits based upon the associated averaging times.

Volatile Organic Compounds (VOC) and Carbon Monoxide (CO):

- Based on the results of the initial compliance testing and the expected levels of emissions as compared to the regulatory allowable emission limits, no periodic monitoring of VOC and CO emissions is considered necessary. Additionally the only control device for the CT is an SCR that is only used to control NO_x emissions; therefore, CAM is not applicable to VOC and CO.

Record Keeping and Reporting

- An excess emissions report for the combined turbine/duct burner stack as defined by 40 CFR Part 60, Subpart A, §60.7(c) and (d), shall be submitted quarterly to the Department within 30 days of the end of each reporting period.

(ADEM Admin. Code r. 335-3-16-.05(c) and 40 CFR §60.7(c) and (d))

- Records of monthly and rolling 12-month power augmentation with duct burning, power augmentation alone, and duct firing alone shall be maintained in a form suitable for inspection for a period of at least two years.

(ADEM Admin. Code r. 335-3-14-.04) BACT

- The facility shall comply with the recordkeeping and reporting requirements of CSAPR.

(ADEM Admin. Code r. 335-3-5-.31, 335-3-5-.35, 335-3-8-.33, 335-3-8-.37, 335-3-8-.65, and 335-3-8-.69)

Cross-State Air Pollution Rule

- These units are subject to the applicable provisions of Cross-State Air Pollution Rule (CSAPR) to include all applicable provisions of the SO₂ Group 2 Trading Program requirements.

(ADEM Admin. Code r. 335-3-5-.06 through 335-3-5-.36)

- These units are subject to the applicable provisions of Cross-State Air Pollution Rule (CSAPR) to include all applicable provisions of the NO_x Annual Trading Program requirements.

(ADEM Admin. Code r. 335-3-8-.07 through 335-3-8-.65)

11.64 MMBtu/hr Indirect-fired Fuel Heater (Natural Gas Fired)

The fuel heater fires only pipeline quality natural gas. The fuel heater is manufactured by Total Energy Resources and has a maximum heat input of 11.64 MMBtu/hr.

The 11.64 MMBtu/hr Indirect-fired fuel heater was subject to a Prevention of Significant Deterioration (PSD) Review in which BACT was established for NO_x, SO₂, CO, VOC, PM/PM₁₀/PM_{2.5}. The fuel heater utilizes low-NO_x burner technology for the control of NO_x emissions. The fuel heater is fired by pipeline quality natural gas and inherently limits the PM/PM₁₀/PM_{2.5} and SO₂ emissions.

The fuel heater is also subject to the Federal New Source Performance Standards (NSPS) contained in 40 CFR Part 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*. However, as a unit that would be fired exclusively by natural gas, Subpart Dc includes no applicable emissions standards. The estimated emissions and the associated standards for the fuel heater are listed below.

Emission Standards

Particulate Matter (PM) and Sulfur Dioxide (SO₂):

- The fuel heater shall only fire pipeline quality natural gas.

(ADEM Admin. Code r. 335-3-14-.04) BACT

Nitrogen Oxides (NO_x):

- The NO_x emissions from the fuel heater stack shall not exceed 0.13 lb/MMBtu and 1.6 lb/hr.

(ADEM Admin. Code r. 335-3-14-.04) BACT

Carbon Monoxide (CO):

- The CO emissions from the fuel heater stack shall not exceed 0.081 lb/MMBtu and 0.94 lb/hr.

(ADEM Admin. Code r. 335-3-14-.04) BACT

Volatile Organic Compounds (VOC):

- The fuel heater shall use good combustion practices in order to minimize VOC emissions.

(ADEM Admin. Code r. 335-3-14-.04) BACT

Expected Emissions

Particulate Matter (PM) and Opacity:

- According to the Manufacturer's emissions specifications, the maximum expected particulate emissions from the unit are 0.010 lb/MMBtu or 0.12 lb/hr.

Sulfur Dioxide (SO₂):

- According to the Manufacturer's emissions specifications, the maximum expected sulfur dioxide emissions from the unit are 0.002 lb/MMBtu or 0.023 lb/hr.

Nitrogen Oxides (NO_x):

- According to the Manufacturer's emissions specifications, the maximum expected nitrogen oxides emissions from the unit are 0.133 lb/MMBtu or 1.55 lb/hr.

Carbon Monoxide (CO):

- According to the Manufacturer's emissions specifications, the maximum expected carbon monoxide emissions from the unit are 0.081 lb/MMBtu or 0.94 lb/hr.

Volatile Organic Compounds (VOC):

- According to the Manufacturer's emissions specifications, the maximum expected volatile organic compound emissions from the unit are 0.009 lb/MMBtu or 0.10 lb/hr.

Periodic Monitoring

No periodic monitoring is required by regulation for this unit.

Compliance Assurance Monitoring (CAM)

No control equipment is utilized to meet any applicable emissions limitation

and therefore, CAM does not apply to any pollutant emitted by this unit.

MACT Subpart ZZZZ – Existing Emergency Firewater Pump

This emergency firewater pump is subject to 40 CFR 63, Subpart ZZZZ, because it was manufactured before the applicability dates in 40 CFR Part 60 Subpart IIII. This emergency generator is not subject to 40 CFR Part 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines) because this fire pump engine was manufactured before the applicability date of July 1, 2006. This emergency generator is subject to the applicable requirements in 40 CFR Part 63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE)). The following emergency firewater pump is considered Subpart ZZZZ:

<u>Source #</u>	<u>HP</u>	<u>Fuel</u>
004	805	Diesel

NSPS Subpart IIII

Subpart IIII applies to owners and operators of engines that commence construction after July 11, 2005, where the engines are manufactured on or after July 1, 2006. This compression ignition firewater pump was manufactured before July 1, 2006 therefore Subpart IIII does not apply.

(40 CFR Part 60 Subpart IIII, §60.4200(a)(3))

MACT Subpart ZZZZ

Emission Standards

- This unit is subject to the applicable requirements listed in Table 2d of 40 CFR 63 Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

(40 CFR Part 63 Subpart ZZZZ, §63.6602)

- The Permittee must operate and maintain this unit according to the manufacturer's emission-related written instructions or develop a maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

(40 CFR Part 63 Subpart ZZZZ, §63.6625(e)(3))

- The Permittee must install a non-resettable hour meter for each unit if one is not already installed.

(40 CFR Part 63 Subpart ZZZZ, §63.6625(f))

- This unit may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of this unit is limited to 100 hours per year. There is no time limit on the use of this unit in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. This unit may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. Any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in 40 CFR 63 Subpart ZZZZ, is prohibited.

(40 CFR Part 63 Subpart ZZZZ, §63.6640(f))

Expected Emissions

The expected emissions are based on AP-42 emission factors, manufacturer's certifications, and a maximum operation of 500 hours per year. The expected emissions of the firewater pump engine subject to Subpart ZZZZ – Existing Firewater Pump Emergency Engines are shown below:

Pollutant	805 HP Firewater Pump	
	lb/hr	TPY
PM ₁₀ / PM _{2.5}	0.752	0.188
SO ₂	0.125	0.031

NO_x	10.7	2.7
CO	2.31	0.6
VOC	0.850	0.212
CO_{2e}	--	233.84

MACT Monitoring

The Permittee shall perform the following activities:

- (a) Change oil and filter every 500 hours of operation or annually, whichever comes first;
- (b) Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first;
- (c) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Or utilize an oil analysis program as describe in §63.6625(i) or §636625(j).

(40 CFR Part 63 Subpart ZZZZ, Table 2d & §63.6625(i))

If an oil analysis program is utilized for a stationary compression ignition engine, the Permittee must perform the oil analysis at the same frequency specified above for changing the oil. The Permittee must at a minimum analyze the following parameters: Total Base Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new, viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new, or percent water content (by volume) is greater than 0.5. If any of the limits are exceed, the Permittee must change the oil within 2 business days of receiving the results of the analysis or before commencing operation, whichever is later.

(40 CFR Part 63 Subpart ZZZZ, §63.6625(i))

CAM

This source is uncontrolled; therefore, CAM does not apply.

Recordkeeping and Reporting

The Permittee must keep records of the parameters that are analyzed as part of the oil analysis program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine. These records shall be maintained in a manner suitable for inspection for a period of 5 years from record generation.

(40 CFR Part 63 Subpart ZZZZ, §63.6625(i))

The Permittee must keep records of the maintenance conducted on these units in order to demonstrate that you operated and maintained these units and after-treatment control device (if any) according to your own maintenance plan or according to manufacturer's written instructions. These records shall be maintained in a manner suitable for inspection for a period of 5 years from record generation.

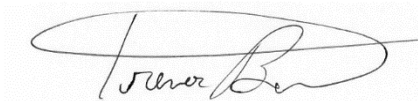
(40 CFR Part 63 Subpart ZZZZ, §63.6655(e))

The Permittee must keep records of the hours of operation of each engine that is recorded through the non-resettable hour meter. The facility must document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency operation. These records shall be maintained in a manner suitable for inspection for a period of 5 years from record generation.

(40 CFR Part 63 Subpart ZZZZ, §63.6655(f))

Recommendation:

Based on the above analysis and pending the resolution of any comments received during the 30-day public comment period and 45 day EPA review, I recommend issuing the attached renewal MSOP for Hillabee Energy Center.



Trevor Baird
Industrial Minerals Section
Energy Branch
Air Division

DATE
Date